May 8, 1945. H. E. MILLS 2,375,314

FLASHLESS DISCHARGER AND FLARE

Filed March 22, 1943

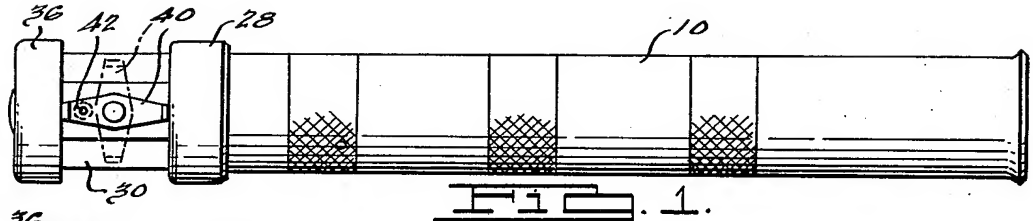

Fig. 1.

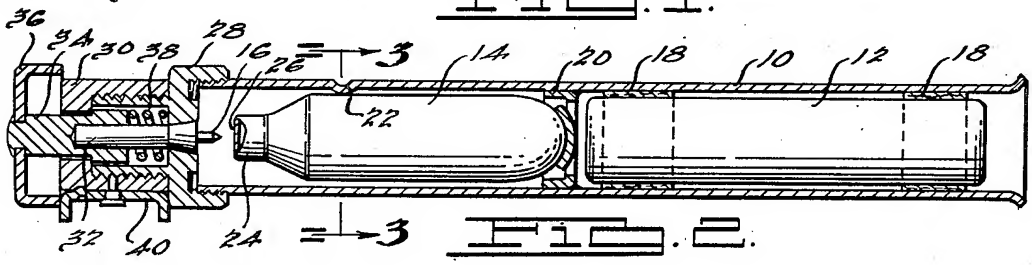

Fig. 2.

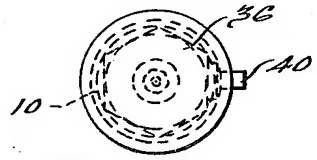

Fig. 4.

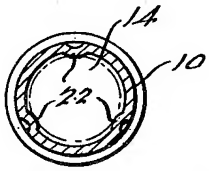

Fig. 3.

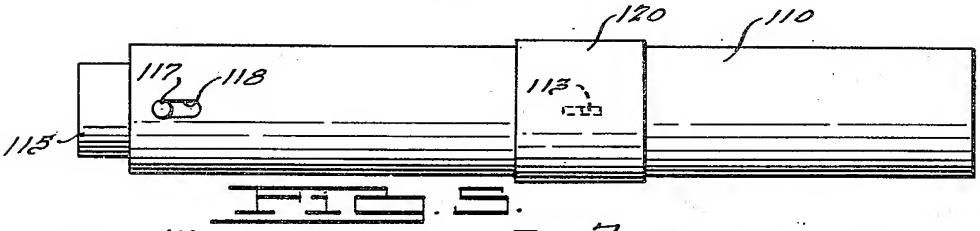

Fig. 5.

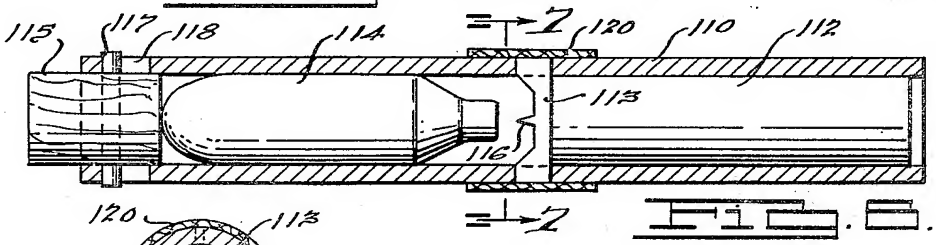

Fig. 6.

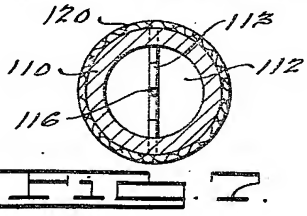

Fig. 7.

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FLASHLESS DISCHARGER AND FLARE

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5 Claims. (Cl. 124—11)

This invention relates to dischargers and/or flares and has particular reference to a flashless discharger adapted for firing projectiles such for example as flares or the like.

The invention in the embodiments thereof selected for purposes of illustration comprises a self-contained hand discharger which is particularly adapted for discharging a projectile such as a flare, and makes use of a charge of highly compressed fluid as the propelling force in lieu of an explosive so that the projectile may be discharged without any flash so that the location from which the projectile is fired will not be disclosed.

Principal objects of the invention are:

To provide a flashless discharger;

To provide a self-contained flashless flare;

To provide a self-contained flashless discharger for shooting flares and the like;

To provide a very cheap and simple discharger which may be adapted for shooting projectiles such as flares and the like.

Other objects and advantages of the invention will be apparent from a consideration of the following specification taken in conjunction with the accompanying drawing, of which there is one sheet and wherein:

Fig. 1 is a side elevational view of one form of device embodying my invention;

Fig. 2 is a longitudinal sectional view of the device illustrated in Fig. 1;

Fig. 3 is a transverse sectional view taken in a plane along the line 3—3 of Fig. 2;

Fig. 4 is an end view of the device illustrated in Fig. 1;

Fig. 5 is an elevational view of a modified form of the invention;

Fig. 6 is a longitudinal sectional view of the device illustrated in Fig. 5; and

Fig. 7 is a transverse sectional view taken along the line 7—7 of Fig. 6.

As illustrated in Figs 1–4 of the drawing, the device embodying my invention comprises a barrel or cylinder 10 adapted to be grasped in a hand of the operator, a projectile 12 adapted to be expelled from the barrel 10, a compressed fluid cartridge 14, and a means for rupturing the cartridge 14 comprising a hand-actuated pin 16. The barrel 10 may be formed of metal or any other suitable material and is constructed and designed so as to withstand the pressure developed when the cartridge 14 is ruptured.

The projectile 12, which may consist of a flare signal or any other type of projectile, is arranged in the barrel 10 at the mouth end thereof and may be snugly fitted within annular gaskets 18 which in turn are snugly positioned within the barrel 10 so as to efficiently utilize the expelling force released by the puncturing of the cartridge 14.

A means not shown may be provided in the mouth of the barrel 10 for preventing the accidental displacement of the projectile 12 from the barrel 10, and this means, if used, of course should be removed out of the path of the projectile 12 before the expelling force is released.

In this instance the expelling force for hurling the projectile from the barrel may be provided by suddenly releasing a charge of highly compressed fluid contained within the cartridge 14. The compressed fluid may for example be CO_2 or any other suitable fluid. The cartridge 14 is charged with a sufficient amount of this fluid under such pressure as is desired in order to obtain the desired travel of the projectile 12.

The cartridge 14 is secured in the barrel 10 rearwardly of the projectile 12 and held therein by an apertured plate 20 which may be firmly secured within the barrel 10 in any suitable way, such for example as by welding or soldering. The cartridge 14 is supported in spaced relation to the interior of the barrel 10 by the seat provided by the plate 20 and by a plurality of inwardly projecting bumps or dimples 22 which may be formed in the walls of the barrel 10.

The rearward end 24 of the cartridge 14 is provided with a disc or membrane 26 which is adapted to be punctured or ruptured by the pin 16 when actuated in the manner hereinafter set forth. Upon rupturing of the disc 26 the highly compressed fluid with which the cartridge 14 is charged will be released and the pressure exerted thereby will act on the shell 12 and expel the same forcibly from the barrel 10.

The rear end of the barrel 10 is provided with a means for carrying and actuating the pin 16 and this means comprises a member 28 suitably secured to the end of the barrel 10, another member 30 carried by the member 28, a rod or member 32 which carries the pin 16 and forms a part of a plunger which includes another member 34 to which a cap is suitably affixed. A spring 38 confined between the members 34 and 28 normally positions the pin away from the membrane 26 and a safety 40 pivotally secured to the outside of the member 30 is adapted to span the space between the cap 36 and the member 28 so as to prevent accidental movement of the plunger and the pin 16. By manually turning the safety 40 to the dotted line position illustrated in Fig. 1,

the pin 16 may be moved so as to rupture the membrane 26 by a sharp blow imparted to the cap 36 in the direction of the cartridge 14. A detent 42 may be provided between the safety 40 and the member 30 so as to prevent accidental displacement of the safety 40.

In the embodiment illustrated in Figs. 5, 6 and 7, a device similar to that illustrated in Figs. 1–4 is provided except that in the embodiment illustrated in Figs. 5–7 the barrel 110 may be made of paper, cardboard, plastic, or the like. A projectile 112 is suitably arranged within the barrel 110 and may be positioned against a transverse member 113 which is provided with a pin 116 adapted for rupturing the membrane or disc of the cartridge 114 which is positioned in the barrel 110 rearwardly of the projectile 112 so as to be movable relative to the barrel 110 in order that the disc of the cartridge 114 may be ruptured by the pin 116 in order to release the compressed fluid into the barrel.

The cartridge 114 may have a friction fit within the barrel 110 and is adapted to be moved by plug 115 which projects from the rear end of the barrel. The plug is held in assembled relationship with the barrel 110 by a pin 117 which projects into guides or slots 118 formed in the barrel. By imparting a blow to the block 115 in the direction of the projectile 112 the block 115 will move the cartridge 114 so that the pin 116 will rupture the disc thereof so as to expel the projectile 112 from the barrel 110 of the discharger. The member 113 may be held in place by a band 120 which encircles the barrel intermediate the ends thereof.

The device illustrated in Figs. 5, 6 and 7 is particularly designed as a single shot, self-contained flare and discharger, which is adapted to be discarded after the projectile 112 has been fired. The device illustrated in Figs. 1–4 may also be constructed sufficiently cheaply so as to be discarded after a single use, but if made as illustrated it may be reused by the insertion of another projectile 12 in the front end of the barrel and the insertion of another cartridge 14 in the rear end of the barrel. In this regard it should be noted that the member 28 has a threaded connection with the rear end of the barrel 10 which permits the parts to be disassembled, the used cartridge 14 removed, and a new cartridge inserted.

If the projectile 12 is a flare signal, it may be of any desired construction and include means for igniting the flare after it is in the air and means for floating the flare in the air during combustion thereof.

While the invention has been described with some detail, it is to be understood that the description is for the purpose of illustration only and is not definitive of the limits of the inventive idea. The right is reserved to make such changes in the details of construction and arrangement of parts as will fall within the purview of the attached claims.

I claim:

1. As an article of manufacture a combined projectile and discharger comprising a barrel having a projectile frictionally secured there'n for discharge therefrom, said barrel being closed at one end and the projectile closing the other end thereof, means for discharging said projectile comprising a cartridge of highly compressed fluid arranged in said barrel between said projectile and the closed end of said barrel, and means for rupturing said cartridge for suddenly releasing said fluid into said barrel at the rear of said projectile thereby to discharge said projectile from said barrel, said barrel having a substantially unobstructed bore permitting a substantially free discharge of said projectile upon release of said charge, said barrel providing a case for said projectile as well as the barrel of the discharger therefor.

2. As an article of manufacture a self-contained expendable discharger and signal comprising a barrel having a projectile frictionally secured therein for discharge therefrom, said barrel being closed at one end and the projectile closing the other end thereof, means for discharging said projectile comprising a cartridge of highly compressed fluid arranged in said barrel between said projectile and the closed end of said barrel, and means for puncturing said cartridge for suddenly releasing said fluid into said barrel behind said projectile, thereby to discharge said projectile from said barrel, said barrel having a substantially unobstructed bore permitting a substantially free discharge of said projectile upon release of said charge, said barrel providing a case for said projectile as well as the barrel of the discharger therefor.

3. As an article of manufacture a flashless discharger comprising a barrel, a projectile frictionally secured therein for discharge therefrom, a cartridge of highly compressed fluid within said barrel, and means for suddenly releasing said fluid into said barrel at the rear of said projectile so as to provide an expelling force for discharging said projectile from said barrel, said means including a pin adapted to rupture said cartridge and manually operated means for moving said pin and cartridge relative to each other in order to rupture said cartridge, said barrel having a substantially unobstructed bore permitting a substantially free discharge of said projectile upon release of said charge, said barrel providing a case for said projectile as well as the barrel of the discharger therefor.

4. As an article of manufacture a flashless discharger comprising a barrel, a projectile frictionally secured therein for discharge therefrom, a cartridge of highly compressed fluid movably arranged within said barrel, and means for suddenly releasing said fluid into said barrel at the rear of said projectile so as to provide an expelling force for discharging said projectile from said barrel, said means including a pin adapted to engage and rupture a membrance of said cartridge upon movement thereof, said barrel having a substantially unobstructed bore permitting a substantially free discharge of said projectile upon release of said charge, said barrel providing a case for said projectile as well as the barrel of the discharger therefor.

5. As an article of manufacture a flashless discharger comprising a barrel, a projectile frictionally secured therein for discharge therefrom, a cartridge of highly compressed fluid within said barrel, and means for suddenly releasing said fluid into said barrel at the rear of said projectile so as to provide an expelling force for discharging said projectile from said barrel, said means including a movable pin adapted to engage and rupture a membrane of said cartridge, said barrel having a substantially unobstructed bore permitting a substantially free discharge of said projectile upon release of said charge, said barrel providing a case for said projectile as well as the barrel of the discharger therefor.

HERBERT E. MILLS.